WHAT IS CLAIMED IS:

1. A method of identifying a clean signal feature vector from a noisy signal feature vector, the method comprising:

generating at least two mixture components for a prior probability describing combinations of clean signal feature vectors with obscuring feature vectors; and

using each mixture component of the prior probability and the noisy signal feature vector to identify the clean signal feature vector.

2. The method of claim 1 wherein at least one obscuring feature vector is a noise feature vector.

3. The method of claim 2 wherein generating at least two mixture components comprises generating a separate mixture component for the intersection of each noise feature vector with distributions of clean signal feature vectors.

4. The method of claim 2 wherein generating at least two mixture components comprises generating a separate mixture component for each intersection of a distribution of noise feature vectors with a distribution of clean signal feature vectors.

5. The method of claim 4 wherein the distribution of noise feature vectors is approximated as a Gaussian distribution.

6. The method of claim 4 wherein there are multiple distributions of noise feature vectors, each distribution representing a mixture component in a mixture of distributions and wherein generating at least two mixture components further comprises generating a separate mixture component for each intersection of a mixture component of the mixture of distributions for the noise feature vectors with a distribution of clean signal feature vectors.

7. The method of claim 1 wherein at least one obscuring feature vector is a channel distortion feature vector.

8. The method of claim 7 wherein generating at least two mixture components comprises generating a separate mixture component for the intersection of each channel distortion feature vector with the distributions of clean signal feature vectors.

9. The method of claim 7 wherein generating at least two mixture components comprises generating a separate mixture component for each intersection of a distribution of channel distortion feature vectors with a distribution of clean signal feature vectors.

10. The method of claim 9 wherein the distribution of channel distortion feature vectors is approximated as a Gaussian distribution.

11. The method of claim 9 wherein there are multiple distributions of channel distortion feature vectors, each distribution representing a mixture component in a mixture of distributions for the channel distortion feature vectors and wherein generating at least two mixture components further comprises generating a separate mixture component for each intersection of a mixture component of the mixture of distributions for the channel distortion feature vectors with a distribution of clean signal feature vectors.

12. The method of claim 1 wherein the clean signal feature vectors comprise clean signal feature vectors from at least two sources.

13. The method of claim 1 wherein at least one obscuring feature vector is a channel distortion feature vector associated with a first channel and at least one other obscuring feature vector is a channel distortion feature vector associated with a second channel.

14. The method of claim 1 wherein identifying the clean signal feature vector comprises using algorithms obtained through an approximate Bayesian

inference technique to identify the clean feature vectors.

15. A computer-readable medium comprising computer-executable instructions for performing steps comprising:

receiving a feature vector representing a portion of a noisy signal; and

identifying a feature vector representing a portion of a clean signal from the feature vector for the noisy signal through steps comprising:

determining the intersections of at least two distributions of obscuring feature vectors with at least one distribution of model clean signal feature vectors;

using the intersections to identify at least two mixture components for a probability distribution that describes the prior probability of combinations of obscuring feature vectors and clean signal feature vectors; and

using the mixture components of the prior probability and the feature vector for the noisy signal to identify the feature vector for the clean signal.

16. The computer-readable medium of claim 15 wherein determining the intersection of at least two distributions of obscuring feature vectors comprises determining the intersection between at least two separate obscuring feature vectors with the at least one distribution of model clean signal feature vectors.

17. The computer-readable medium of claim 16 wherein the obscuring feature vectors are model noise feature vectors.

18. The computer-readable medium of claim 16 wherein the obscuring feature vectors are model channel distortion feature vectors.

19. The computer-readable medium of claim 18 wherein one of the channel distortion feature vectors is associated with a first channel and another of the channel distortion feature vectors is associated with a second channel that is different from the first channel.

20. The computer-readable medium of claim 15 wherein determining the intersection of the at least one distribution of model clean signal feature vectors with at least two distributions of obscuring feature vectors comprises determining the intersection with at least two distributions that are

mixture components of a total distribution of obscuring feature vectors.

21. The computer-readable medium of claim 20 wherein the mixture components are Guassian distributions.

22. The computer-readable medium of claim 20 wherein the at least two distributions of obscuring feature vectors comprise at least two distributions of noise feature vectors.

23. The computer-readable medium of claim 20 wherein the at least two distributions of obscuring feature vectors comprise at least two distributions of channel distortion feature vectors.

24. The computer-readable medium of claim 15 wherein the at least one distribution of model clean signal feature vectors comprises at least one model clean signal feature vector from a first source and at least one model clean signal feature vector from a second source.

25. A method of identifying a clean signal feature vector from a noisy signal feature vector, the method comprising:

identifying a mixture of distributions that provide prior probabilities for

combinations of clean signal feature vectors and obscuring feature vectors;

determining an observation variance to associate with the noisy signal feature vector; and

using the prior probability mixture of distributions and the observation variance to identify the clean signal feature vector.

26. The method of claim 25 wherein determining an observation variance comprises using a closed-form expression to determine the variance.

27. The method of claim 25 wherein determining an observation variance comprises:

generating a feature vector from a clean signal;

generating a feature vector from a noise signal;

generating an observed noisy signal feature vector from a noisy signal that is the combination of at least the clean signal and the noise signal;

calculating a calculated noisy signal feature vector from the feature vector from the clean signal and the feature vector from the noise signal;

comparing the observed noisy signal feature vector to the calculated noisy signal

feature vector to determine the variance.

28. The method of claim 27 wherein determining an observation variance further comprises determining a feature vector for channel distortion and wherein calculating a calculated noisy signal feature vector further comprises calculating the calculated noisy signal feature vector in part from the feature vector for channel distortion.

29. The method of claim 25 wherein identifying a mixture of distributions that provide prior probabilities comprises identifying a mixture of distributions for the obscuring feature vectors and a mixture of distributions for the clean signal feature vectors.

30. The method of claim 29 wherein the obscuring feature vectors comprise noise feature vectors.

31. The method of claim 31 wherein the obscuring feature vectors further comprise channel distortion feature vectors.

32. A computer-readable medium having computer-executable instructions for performing steps comprising:

accessing a noisy signal feature vector;

accessing at least one distribution of training feature vectors;

determining a variance for the noisy signal feature vector;

identifying a clean signal feature vector from the noisy signal feature vector, the distribution of training feature vectors and the variance for the noisy signal feature vector.

33. The computer-readable medium of claim 32 wherein determining a variance for the noisy signal feature vector comprises determining the variance from a closed-form expression.

34. The computer-readable medium of claim 32 wherein determining a variance for the noisy signal feature vector comprises:

applying feature vectors to a function to produce a calculated noisy signal feature vector;

accessing an observed noisy signal feature vector; and

comparing the calculated noisy signal feature vector to the observed noisy signal feature vector to produce the variance for the noisy signal feature vector.

35. The computer-readable medium of claim 34 wherein the feature vectors applied to the function to produce the calculated noisy signal feature vector comprise at least one clean signal feature vector and at least one obscuring signal feature vector.

36. The computer-readable medium of claim 35 wherein the at least one obscuring signal feature vector comprises a noise signal feature vector that is generated from a noise signal.

37. The computer-readable medium of claim 35 wherein the at least one obscuring signal feature vector comprises a channel distortion feature vector.

38. The computer-readable medium of claim 37 wherein the at least one obscuring signal feature vector further comprises a noise signal feature vector that is generated from a noise signal.

39. The computer-readable medium of claim 37 wherein the at least one obscuring signal feature vector comprises a first channel distortion feature vector associated with a first channel and a second channel distortion feature vector associated with a second channel.

40. The computer-readable medium of claim 35 wherein the at least one clean signal feature vector comprises at least one clean signal feature vector

based on a clean signal from a first source and at least one clean signal feature vector based on a clean signal from a second source.

41. A method of identifying a clean signal feature vector from a noisy signal feature vector, the method comprising:

accessing a distribution of training feature vectors that represents a prior probability of combinations of training feature vectors;

setting an initial value for a component of a clean signal feature vector;

determining a revised value for the component of the clean signal feature vector based in part on the initial value for the component, the distribution of training feature vectors, and the noisy signal feature vector;

determining whether to accept the revised value as a final value for the component; and

using the final value for the component to identify the clean signal feature vector.

42. The method of claim 41 wherein determining whether to accept the revised value as a final value comprises:

deciding not to accept the revised value as the final value;

determining a further revised value for the component of the clean signal feature vector based in part on the revised value for the component, the distribution of training feature vectors, and the noisy signal feature vector; and

determining whether to accept the further revised value as a final value for the component.

43. The method of claim 41 wherein the steps of the method are repeated for a plurality of distributions of training feature vectors to generate a final value for a plurality of components of the clean signal feature vector.

44. The method of claim 41 wherein determining a revised value comprises determining a revised value based in part on a variance associated with the noisy signal feature vector.

45. The method of claim 41 wherein accessing a distribution comprises accessing a distribution representing a mixture component of a mixture of distributions for noise training feature vectors.

46. The method of claim 45 wherein the mixture component is described in part by a variance.

47. The method of claim 41 wherein accessing a distribution comprises accessing a distribution representing a mixture component of a mixture of distributions for channel distortion training feature vectors.

48. The method of claim 47 wherein the mixture component is described in part by a variance.

49. A computer-readable medium having computer-executable instructions for performing steps comprising:

accessing a noisy signal feature vector;

accessing at least one distribution of training feature vectors;

identifying an initial value for a clean signal feature vector; and

performing iterations to identify a final value for the clean signal feature vector, each iteration performing a calculation based on the noisy signal feature vector, at least one distribution of training feature vectors, and a current value for the clean signal feature vector, the current value for the clean signal

feature vector being updated with each iteration.

50. The computer-readable medium of claim 49 performing a calculation at each iteration further comprises performing the calculation based on a variance for the noisy signal feature vector.

51. The computer-readable medium of claim 49 wherein accessing at least one distribution of training feature vectors comprises accessing at least one distribution of training feature vectors that is based on a distribution of noise training feature vectors.

52. The computer-readable medium of claim 51 wherein the distribution of noise training feature vectors is described by a variance.

53. The computer-readable medium of claim 51 wherein the distribution of noise training feature vectors is a mixture component of a mixture of distributions for noise training feature vectors.

54. The computer-readable medium of claim 49 wherein accessing at least one distribution of training feature vectors comprises accessing at least one distribution of training feature vectors that is based on a distribution of channel distortion training feature vectors.

55. The computer-readable medium of claim 54 wherein the distribution of channel distortion training feature vectors is described by a variance.

56. The computer-readable medium of claim 54 wherein the distribution of channel distortion training feature vectors is a mixture component of a mixture of distributions for channel distortion training feature vectors.

57. The computer-readable medium of claim 54 wherein the at least one distribution of channel distortion training feature vectors comprises at least one distribution of channel distortion training feature vectors associated with a first channel and at least one distribution of channel distortion training feature vectors associated with a second channel.